TUDS MODULAR PIT RANGE

MODULAR PITS FOR DISTRIBUTION NETWORKS

1. PURPOSE

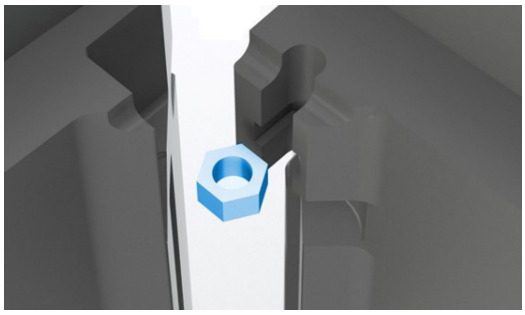
The Purpose of this document is to create a guideline on the installation of the TUDS modular pit system. All material is available for the purpose of general guidance and therefore we can not anticipate all the conditions that may be encountered under field conditions, but our team of Engineers are available for advice and direction.

2. ASSEMBLE

Before install implementation, the knock-down system needs to be assembled. This is a modular manhole system that is flat-pack from factory and assembled in site, reducing transport and storage costs.

3. ASSEMBLY STEPS

3.1 Bury M12 nut between 2 panels and close the panels.



3.2 Use FastClip to connect panels making a box

3.3 If there is a bottom plate, place box onto the bottom plate, use clip to fasten the bottom plate onto the box.

3.4 Place cover onto the box, fasten the screw. If there is an additional riser required, repeat steps 3.1 and 3.2 to form a riser box. Stack riser onto the 1st box.

4. SITE INSTALLATION

4.1 Site Preparation

Prior to the installation

- Ensure all safety rules and policies are carried out correctly and that all related regulations have been met.
- Ensure vehicular and pedestrian traffic management procedures and policies have been followed and suitable traffic management is in place prior to commencing excavating.
- Ensure all permits and relevant public authorizations have been secured and complied.

4.2 Excavation

Excavate a pit size that is,

Depth – 200 mm deeper than the dimension of the product.

Length and Width – 300 mm greater than the dimension of the product for both dimensions at the base level.

4.3 Geotechnical Requirements and Inspection

The ground condition shall be subject to inspection and confirmation by a Geotechnical Engineer. The requirements for AS3996:2019 (Ref. 1) Load Classes C and D are provided below,

i. For Class C covers and grates, the foundation condition shall meet the "Good Ground" condition as per B1 Structures (Ref. 3). "Good Ground" means any soil or rock capable of permanently withstanding an ultimate bearing pressure of 300 kPa with exclusions provided in item iii below.

ii. For Class D covers and grates, the soil or rock is capable of permanently withstanding an ultimate bearing pressure of 500 kPa with exclusions provided in item iii below.

iii. The following ground conditions require specific review and assessment from a Geotechnical Engineer,

a) Potentially compressible ground such as topsoil, soft soils such as clay which can be moulded easily in the fingers, and uncompacted loose gravel which contains obvious voids.
b) Expansive soils being those that have a liquid limit of more than 50% when tested in accordance with NZS 4402 Test 2.2, and a linear shrinkage of more than 15% when tested from the liquid limit, in accordance with NZS 4402 Test 2.6, and/or
c) Any ground which could foreseeably experience movements of 25 mm or greater for any reason including one or a combination of land instability, ground creep, subsidence, liquefaction, lateral spread, seasonal swelling and shrinking, frost heave, changing ground water level, erosion, dissolution of soil in water, and effects of tree roots.
d) Ground with a slope steeper than 1V : 20H, i.e. 5%.
e) Ground with winter high groundwater level to the ground surface.

4.4 Foundation Preparation

The following foundation shall be prepared for Classes C and D as per the following requirements. An alternative is given for sites where a higher standard is preferred.

i. Class C Foundation - Place and compact two 75 mm layers of General All Passing 40 (GAP 40) aggregate, followed by a 50 mm layer of GAP 7 on top of it. The aggregate shall be free of soil and other organic matter and shall meet Transit New Zealand Specification for Basecourse Aggregate, TNZ M4: 2006 (Ref. 4). The GAP 40 aggregate shall be compacted using appropriate compactor with the finished surface verified using Impact Test (i.e. Clegg Hammer). The Impact Value shall be equal to or greater than 25 IV.
ii. Class D Foundation – A dry mix of cement and crushed rock (e.g. GAP 20) in a 1 in 10 ratio. The mix shall be inspected by an Engineer.
iii. Alternative – Reinforced concrete with wired mesh can be used to form a higher-strength foundation.

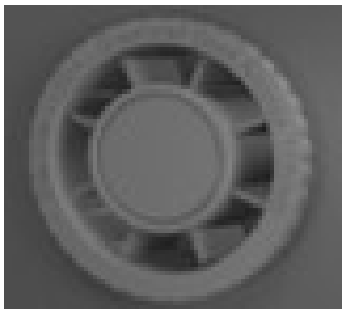
Note: All of the above foundations shall be made over the entire footprint of the excavated pit.

4.5 Drill Duct Entry Holes

The TUDS modular pit system will accommodate base (when ordered with bottom plate), and sidewall entry that can be positioned on base or sidewall of the pit.
Maximum size of side entry hole is 120mm I.D.

a. Side Entry

- Side entry holes can be drilled through ribs from the inside of the sidewall without compromising the load rating. However, it is recommended that holes should be drilled between the ribs for ease of drilling.
- Mark entry hole position and drill holes using suitable hole saw. Note a minimum of 10mm spacing should remain between 2 holes.
- 100mm/50mm duct entry accessories available for ease of drawing/ pulling duct.
- Provision for side entry holes on the sidewall however, this may require an MOQ. Please contact us for more information.



b. Bottom Entry

- If required, drill through base plate to accommodate duct entry. Alternatively, the pit can be installed without base plate if this is approved by asset owner.
- Centrally position the pit over vertical conduit.
- Conduit should protrude a minimum of 100mm from inside base plate of pit. Conduit entry should be sealed with cap to stop water/dirt ingress.

4.6 Place Pit into Excavation

Note: The TUDS modular pit (with base plate, if any) should be installed prior to placing the pit in position. The cover can be secured after the pit body is put in place, for ease of work.

- Adjust the pit height so the top of the pit is level with the surrounding ground surface, by adding/reducing the height of the foundation material.
- Centre the pit in the excavation in line with the conduit entries and parallel to the edge of the footway or driveway paving.

4.7 Backfilling

The following backfill requirements shall be:

i. Any loose soil shall be removed from the pit.
ii. Prior to backfilling, all required ducts/pipes shall be connected without visible damage and bending.
iii. Ensure lid is secured onto pit. Doing so maintains the final squareness of the pit after backfilling allowing the lid to easily be removed after final groundworks are complete.
iv. The excavated hole shall be backfilled with GAP 20 aggregate. Hand tamp the aggregate in layers of 100 to 150 mm to ensure the filling of backfill into the cells of the pit wall. Care shall be taken to prevent damage to the cellular ribs during the tamping. Alternatively, concrete mixture can be used as stabilising backfill if required. The concrete shall be vibrated to ensure that the pour is free of air.
v. Backfill to the reserve level which allows for concrete/asphalt thickness. Tamp the final layer of the backfill to a uniform level to grade.

Place concrete/asphalt to meet the original design specification of the pavement. If connecting to existing concrete, add starter bars on each side.

4.7 Finishing and Clearing

Clear the site before leaving.